



P. MICHAEL STURLA
CHAIRMAN
MAJORITY POLICY COMMITTEE

HOUSE OF REPRESENTATIVES
COMMONWEALTH OF PENNSYLVANIA
HARRISBURG

HOUSE MAJORITY POLICY COMMITTEE HEARING
Topic: Hereford Manor Dams' Environmental and Economic Impact
Franklin Township Volunteer Fire Department – Ellwood City, PA
March 29, 2010

AGENDA

- 3:00 p.m. Welcome and Opening Remarks
- 3:10 p.m. Panel of State Officials:
- Patricia McSparran
Director of Bureau of Waterways Engineering
Pennsylvania Department of Environmental Protection
 - Brian Barner
Deputy Director
Pennsylvania Fish and Boat Commission
 - Gary Moore
Legislative Liaison
Pennsylvania Fish and Boat Commission
- 3:50 p.m. Panel of Local Officials:
- John Ball
President
Hereford Manor Conservancy and Watershed Group, Inc.
 - Tom King
Director of Tourism and Recreation
Beaver County
- 4:30 p.m. Closing Remarks

**Testimony of
Patricia McSparran, Bureau Director, Waterways Engineering
Department of Environmental Protection
before the
House Democratic Policy Committee
Monday, March 29, 2010**

Chairman Sturla, Chairman Gibbons and members of the committee, thank you for the opportunity to appear before you to discuss the serious deteriorating conditions that exist at the Upper and Lower Hereford Manor dams located in Beaver County and the potential danger they pose to the area residents and businesses should they fail.

Both dams are classified as high hazard dams -- meaning that in the event that either dam would fail; there is the potential for a substantial loss of life. These dams are two of 17 Pennsylvania Fish and Boat Commission (PFBC)-owned dams that currently meet the department's regulatory definition of unsafe. Of these 17 dams, the Upper and Lower Hereford Manor dams rank second and third, respectively in failure risk.

The worsening of these conditions at these dams throughout the past three decades has been documented through annual inspections by DEP and PFBC engineers. As with any dam owner, the department will continue to work with the PFBC to either breach, repair or replace both dams or to replace both dams with one dam. However, it is the opinion of this department that any attempt to rehabilitate either dam would be difficult without either total removal of the existing dams or removal of large portions of the existing dams due to the lack of engineering of the original structures; the potential for poor materials being used in the dams' construction; and questionable fill placement and compaction during their construction.

In order to lessen the risk to people and property downstream of both dams, DEP and PFBC mutually agreed to lower the normal pool of the Upper Hereford Dam by 10 feet in 2003 and to partially drain the pool of the Lower Hereford Dam by more than four-feet late last fall. The effect of lowering the pool of the upper dam was to decrease the seepage at the toe of the dam and to provide additional flood storage in the reservoir. Although flow through the upper spillway bypasses the lower dam, the spillway is seriously inadequate and overtopping of the dam during a flooding event was a real concern. Increased seepage at the lower dam necessitated partially draining the Lower Hereford Dam late last year.

Seepage rates have declined since the lake has been lowered. Due to increased concerns at both dams, the DEP and PFBC are inspecting the dams more frequently and seepage rates are being monitored. An Emergency Action Plan was developed and approved in 2007 to identify the possible inundation areas downstream of the dam and to establish procedures to be followed if conditions at either dam drastically worsen or flooding is predicted.

It is our understanding that the PFBC has secured funding to breach the dams which will eliminate the potential failure of the dams and the risk to property and those living downstream.

Structural Stability

The Lower Hereford Manor Dam has excessive seepage on the downstream slope and toe of the dam with seepage rates increasing over time and the wet areas on the downstream slope getting larger. The Upper Hereford Manor Dam also has excessive seepage at the toe of the dam and has serious structural instability issues. These conditions make both dams vulnerable to failure regardless of weather conditions. The seepage and structural stability issues are compounded by both dams also having seriously inadequate spillway capacity making them even more susceptible to failure during a rain event.

In 2002, PFBC analyzed the spillway capacity of both dams and found the Upper Hereford Manor Dam could only pass 9 percent of the spillway design flood and the Lower Hereford Manor Dam could only pass 17 percent of the spillway design flood. The spillway design flood required by regulation for both dams is the probable maximum flood which is the flood that can reasonably be expected based on a combination of severe storm events and watershed conditions. This detailed analysis demonstrated that because these dams pass less than 50 percent of the required spillway design flood; they would fail as a result of the depth and duration of the overtopping that would occur in this runoff event; and the resultant failure would increase the risk of loss of life in the downstream inundation area therefore DEP considered the dams to be unsafe.

As a result of this PFBC study, the continued increase in seepage and soft areas downstream of the Lower Hereford Manor Dam, the continuous presence of seepage at the toe of the upstream dam and the continued delay in any real progress toward the rehabilitation of either dam, the department requested that PFBC drain the Upper Hereford Manor Dam as much as possible, until both dams could be rehabilitated. Doing so helps to manage risk for those living downstream in potential dam failure inundation areas. With the upper dam partially drained, it can store a much larger runoff event before it would overtop and possibly fail into the reservoir of the lower dam.

Uncontrolled seepage at the downstream toe of any dam is a major concern. Seepage at the toe of a dam and particularly on the embankment slopes indicates that the structure is not sufficiently constructed to contain the water pressures of the upstream impoundment. Uncontrolled seepage may carry fine soil particles from the soil matrix of the dam embankment, eventually leading to direct flow paths from the reservoir through the earthfill to the downstream slope or toe. These flow paths can slowly erode embankment soils and can result in the formation of natural pipes through the embankment.

General seepage through earthfill embankment dams also weakens the stability of the downstream slope itself that can result in sudden movement of large portions of the embankment. Either one of these scenarios can lead to a sudden catastrophic failure of the dam under normal sunny day conditions. While these failure mechanisms typically progress slowly on a daily basis, a flooding condition which raises the pool level can dramatically increase pressures driving these processes and greatly increase the risk of a sudden catastrophic failure of the dam.

Finally, in 2009, a local citizen alerted DEP of worsening conditions. This concern was discussed with a PFBC engineer and it was agreed that both agencies should inspect the dam as a result of this concern for worsening conditions. As a result of the findings of these inspections, the department and the PFBC mutually agreed to manage the increasing risk of the lower dam by dropping the control elevation of the spillway and normal pool level of the reservoir by excavation of the spillway bottom through the right abutment of the dam.

Lower Hereford Manor Dam

PFBC has determined that failure of the Lower Hereford Dam could impact up to 27 people and one business as well as State Route 288, the Zelienople Municipal Airport and a portion of the Buffalo and Pittsburgh Railroad line at the State Route 588 crossing.

Occurrence of this spillway design flood would overtop the dam by two feet. Other example rainfalls that would cause overtopping are 5.3 inches of rain in approximately 3.5 hours and 6.0 inches of rain in approximately 10 hours. Such rainfall events are not uncommon in Pennsylvania. Rainfall maps of Doplar radar estimates from the 2004 Ivan event indicate the watershed received approximately four inches during a 24-hour period. Parts of Beaver County received nearly nine inches in the same 24-hour period. Fortunately, this heavier area of precipitation was to the west of Lower Hereford Manor Dam approximately 17 miles away. Had that intensity occurred on this dam's watershed, the dam may have overtopped and failed placing the lives and property downstream at risk. In November 2002, the department notified the PFBC that the Lower Hereford dam met the regulatory definition of unsafe.

The department's 2005 inspection of the Lower Hereford Manor Dam found that the entire toe area of the dam was saturated with the emergence of wetland vegetation and areas of standing water. Commission inspections in 2007 indicated that drain pipes were flowing at half full and the 2008 inspection indicated worsening conditions from one year earlier.

Upper Hereford Manor Dam

Failure of Upper Hereford Manor Dam would cause failure of the Lower Hereford Manor Dam during a storm event and a sunny day failure would likely cause failure of the Lower Hereford Manor Dam due to increasing its pool elevation and resultant stresses on the dam embankment. Occurrence of the spillway design flood would overtop the dam by three feet. Excessive amounts of seepage are also present in the downstream toe area of this dam. In November 2002, the department notified the PFBC that this dam met the regulatory definition of unsafe. The toe area and stability of the structure was of such concern that the Department requested that the reservoir be partially drained. This was accomplished in April of 2003 by lowering the crest of the spillway through the rock abutment by approximately 10 feet.

Funding

As a result of the adoption of the Pennsylvania H2O Act, a minimum of \$50 million in grant money became available for the removal or rehabilitation of publicly-owned unsafe high hazard dams. For the unsafe high hazard dam projects, the act restricted the amount awarded to the commonwealth or an independent agency such as the Pennsylvania Fish and Boat Commission to \$20 million. Interested applicants developed conceptual plans for the projects they desired and applied for these grants through the Department of Community and Economic Development.

Grant applications were reviewed, ranked and approved for funding by the Commonwealth Financing Authority.

PFBC filed 14 grant applications for dam projects totaling approximately \$42 million. Twelve of these applications were for dam rehabilitation projects and two were for dam removal projects. Overall, 18 dam projects have been approved by the Commonwealth Financing Authority under the high hazard unsafe dam program and one dam project was approved under the flood control program. Five of the dam projects were for state owned dams, all of those being PFBC projects. The department is now working with all Pennsylvania H2O Grant recipients in the development, review and approval process for these projects. Construction will begin in 2010 on a few of these projects with the remainder expected to get underway in 2011.

Pennsylvania Fish and Boat Commission
Testimony on the Status of Upper and Lower Hereford Manor Lakes

Majority Policy Committee
Pennsylvania House of Representatives
Franklin Township VFW, Elwood City, PA

Presented by Brian Barner, Deputy Director for Administration, Boating, and Engineering

March 29, 2010

Good afternoon Chairman Sturla and members of the House Majority Policy Committee. My name is Brian Barner, and I am the Deputy Director for Administration, Boating, and Engineering for the Pennsylvania Fish and Boat Commission. On behalf of our Board of Commissioners, and our Executive Director John Arway, thank you for the opportunity to share this testimony.

To place our testimony in a broader context, I will begin with a statewide overview of challenges posed to the Commission by unsafe dams.

Statewide Context

Our mission is to protect, conserve, and enhance aquatic resources and provide fishing and boating opportunities. One of the ways we implement this mission is by managing 40 state-owned lakes and impoundments for recreational fishing and boating.

The Pennsylvania Department of Environmental Protection has identified a number of state-owned unsafe dams that need to be made safe, and the Commission manages 17 of these dams, including the Upper and Lower Hereford Manor Lake Dams. An unsafe dam is one with deficiencies of such a nature that if not corrected could result in the failure of the dam with subsequent loss of lives or substantial property damage.

Unfortunately, we face the same funding dilemma with these dams as we do for other infrastructure problems that we have around the Commonwealth. A budget largely made up from revenues received from the sale of fishing licenses and registration of boats, limits our

Upper and Lower Hereford Manor Lakes

As you know, the Hereford Manor Lakes are located near Zelienople in Franklin Township, Beaver County. They are both fed by Doe Run. The dams appear to have been constructed in conjunction with strip mining operations prior to 1958. The Commission acquired the property on behalf of the Commonwealth of Pennsylvania in 1973.

The 23-acre upper lake dam is 40 feet high and 557 feet long. The embankment is an earth fill structure without a drainage system. An outlet channel cut into bedrock controls the lake level. A 6-inch diameter cast iron drain exists at this dam, but is inoperable. The discharge from the upper lake bypasses the lower lake.

The 45-acre lower lake dam is 37 feet high and 1,000 feet long. The dam's embankment is also an earth fill structure without a drainage system or drain. An outlet channel with splashboards controlled the lake level.

The Commission retained Kimball & Associates of Ebensburg to conduct geotechnical work in 1989. The analysis confirmed that the fill material used in the construction of both dams is unacceptable (according to today's standards) and was not properly compacted. It also showed that neither dam was designed, permitted, or constructed utilizing sound engineering practice.

As a result, we installed a temporary drainage system at the toe of the lower dam. We also developed several concepts for replacement, but have been unable to pursue them due to lack of funding.

Emergency Action Plans

We finalized Emergency Action Plans for each dam in 2006, which were approved by DEP and the Pennsylvania Emergency Management Agency in 2007. The plans identified approximately six homes, one business, and 27 residents that will be impacted from a dam

From 2007 through 2009 the condition continued to worsen as the area showed more saturation and increased in size. With the condition continuing to worsen and with complaints from downstream residents, the Commission and DEP determined that the Lower Lake must be drawn down in the interest of public safety. In November and December of 2009, we excavated a cut through the outlet channel to lower the lake approximately four feet and alleviate pressure on the lower embankment.

Dams and Spillways

We continue to develop and review rehabilitation or replacement alternatives for the dams. Regardless of the chosen alternative, the first step for each is to remove or breach both existing dams. In addition, Commonwealth Financing Authority grant requirements mandate that the \$3.2 million in H2O PA funds allocated for this project be spent by June 30, 2012. While we know there are local concerns about removing or breaching the dams, it's a necessary first step in providing a safe solution. However, without the balance of the funding being secured, we will not be able to move forward with phase 2 of the project to rebuild or replace the dams.

Simply put, we want to rebuild one or both of the dams, but current funding is insufficient to rebuild either of the dams. To fully realize the combined recreational potential of the lakes will require creativity, persistence, and continued leadership from local volunteers and appointed and elected officials to help raise the balance of the funds.

We appreciate the initiative taken by the Hereford Manor Lakes Conservancy and Watershed Group and the interest and commitment of Representative Gibbons and other officials in support of this important local project. The Commission will continue to assist locally driven efforts to raise the funding necessary to complete any future projects designed to restore the lakes property.

HEREFORD MANOR LAKE CONSERVANCY AND WATERSHED GROUP INC.

PENNSYLVANIA HOUSE MAJORITY POLICY COMMITTEE TESTIMONY MARCH 27, 2010

The Hereford Manor Lake Conservancy and Watershed Group Inc. was informally created in 2002 and then incorporated a year later. In our eight+ (8) years of existence we have been working on our single goal of preserving and protecting the Hereford Manor Lake region. We are a 501C(3) non-profit organization comprised of volunteers with no one receiving any pay in our attempts to preserve and protect this valuable green-space.

We would like to thank Rep. Jaret Gibbons' for his continuous support in our efforts since he has been in office and also would like to particularly thank his Chief of Staff, Kevin Bowser, who has supported and advised our group since inception.

We recognize that The Pennsylvania Fish and Boat Commission is doing their best with limited avenues of funding to address significant infrastructure repairs across the commonwealth. We thank them for being most helpful by guiding us through the process of applying for and delivering the feasibility study for this facility. Tom Ford, formerly with PFBC and now with DCNR, was a mentor during our early years and Gary Moore has been equally professional in providing information and direction. Gary's job has been particularly tough since the news in recent years has not always been what we have wanted to hear.

Our group very much understands and appreciates the history of flooding in Western Pennsylvania and the death and destruction that can occur with catastrophic failure of dams such as what happened in Johnstown. We do not object to the engineering concerns or the PMF values assigned to the Hereford Manor Lake facility by the DEP. However, we take great exception to any steps that would breach these dams without some clearly defined restoration plan.

We find it rather ironic that the same organization (DEP) that is enforcing the PMF (possible maximum flood) numbers and need for replacing dams is also the agency within the commonwealth that is responsible for distributing funds collected from current mining operations to repair previously strip-mined areas under Title IV of the Surface Mining Control and Reclamation Act (SMCRA). From the DEP OSM website we note: Pennsylvania will receive nearly \$44 million from the fund in 2010 and is projected to receive a total of \$1.1 billion by 2022. The Hereford Manor Lake region has been on the OSM list since the program's inception.

We noted on the PA Office of Surface Mining (OSM) website a few weeks ago a summary list of the 2010 projects slated for restoration. We certainly appreciate that posting as we have not seen that info publicly disclosed in the past.

We are not questioning OSM's judgment, or the singular value of the restoration projects listed. We would only like to request a comparison of the 2010 properties (and other future restoration projects) to the Hereford Manor Lake region in order for us to understand the options related to future SMCRA funding and we have a few questions:

- (1) Are any of the projects on the list for reclamation located on public lands?**
- (2) Who are the legal owners of the sites and how long have they owned the property?**
- (3) Will private individuals benefit from the restoration of these lands?**

When we posed these same questions to the OSM a few years ago at a face-to-face meeting we were told that the info would be provided. A few weeks later we received a response via email indicating that the OSM has no way of determining who the owners of the property were.

We find that answer incredulous and irresponsible.

We would like to note some information that comes directly from the OSM website:

OSM Guiding Principles

In developing and implementing a comprehensive plan for abandoned mine reclamation, the resources (both human and financial) of the participants must be coordinated to insure cost-effective results. In addition, resources are limited requiring priorities to be set. The following set of principles are intended to guide decision making.

- Partnerships between the DEP, watershed associations, local governments, environmental groups, other state agencies, federal agencies and other groups organized to reclaim abandoned mine lands are essential to achieving reclamation and abating acid mine drainage in an efficient and effective manner.
- Preferential consideration for the development of AML reclamation or AMD abatement projects will be given to watersheds or areas for which there is an approved rehabilitation plan.
- Preferential consideration for the use of designated reclamation moneys will be given to projects that have obtained others sources or means to partially fund the project or to projects that need the funds to match other sources of funds.
- Preferential consideration for the use of available moneys from federal and other sources will be given to projects where there are institutional arrangements for any necessary long-term operation and maintenance costs.
- Preferential consideration for the use of available moneys from federal and other sources will be given to projects that have the greatest worth.
- Preferential consideration for the development of AML projects will be given to AML problems that impact people over those that impact property.

Our group strongly feels that the Hereford Manor Lake facility meets ALL of the above criteria. We would also like to particularly note the HML is a public facility which all citizens of the commonwealth can enjoy ---this is not the case for private lands. If, in fact, some private lands are being restored we take exception for the following reasons:

- (1) Those private owners likely purchased those properties at a distressed price and now will be enhanced financially by the restoration.
- (2) The citizens of the commonwealth are not able to directly enjoy those benefits located on private lands.

With these guidelines in mind and under the Freedom of Information Act the HMLC&WG Inc. respectfully poses the following questions to the DEP and specifically the department of OSM:

- (1) Will the HML region be eligible for SMCRA funds when dams are breached and lakes drained (exposing high-walls and other hazards now concealed by the water) and what we feel is part of your departments tasking to repair?
- (2) If not, why not? And please don't give us one of the verbal answers we received at a meeting with the OSM two years ago like: ***"because the area was flooded by building the dams, they could be determined to be rehabilitated at that time."*** Or ***"Because no one has been injured or killed at this site, there are other facilities that had been assigned higher priority."*** Or, ***"the moneys from this program were not intended to build or repair dams but to rehabilitate the land."***

We find those responses insulting, evasive and inconsistent with OSM Guiding Principles.

In hopes to complete our comments on a positive note: Our meeting with the Federal Dept. of Interior and state OSM personnel two years ago did end with a glimmer of hope with their statement that "if and when the dams are breachedthere may be an option to provide some SMCRA funding for rehabilitation of the area."

We respectfully request the assistance of the organizations represented in this room and other departments in the commonwealth to pursue every possible way to assure our group that SMCRA funding will be assigned and we will not be left with a dangerous mud-hole when these dams are breached and lakes drained exposing high walls and other strip-mine residue dangers. What a shame it would be to have this beautiful "green space" turned into a dangerous and ugly "brown space."

We understand the process of identifying previously strip-mined "Problem Areas" and the difficulty of adding another "problem" to the list. However, this is public land and once the dams are breached and lakes drained we feel the Hereford Manor Lake facility should immediately be assigned as the number one problem area within the commonwealth based on the OSM Guiding Principles.

We reiterate that we will strongly object to the breaching these dams without some clearly defined restoration plan ...and feel that SMCRA funds are a critical part to that plan.

Thank you for the opportunity to share our views.

**TESTIMONY IN SUPPORT
OF THE
HEREFORD MANOR LAKE & DAM IMPROVEMENTS
MONDAY, MARCH 29, 2010**

**PA HOUSE MAJORITY POLICY COMMITTEE
HONORABLE MIKE STURLA
AND
HONORABLE JARET GIBBONS
PRESIDING**

**PREPARED
BY
TOM KING, DIRECTOR
BEAVER COUNTY RECREATION
& TOURISM DEPARTMENT**

**FRANKLIN TOWNSHIP VOLUNTEER FIRE DEPARTMENT
808 OLD ZELIENOPLE ROAD
ELLWOOD CITY, PA**

Good afternoon.

The Vision Statement for Hereford Manor Lake is a vision for rehabilitation, recreation and conservation. When completed, Hereford Manor Lake will be rehabilitated and enhanced to comply with the Federal Dam Safety Act, and to continue to meet the needs of the region's sporting enthusiasts, the passive recreation and conservation needs of the residents of Franklin Township, Beaver, Butler and Lawrence Counties, and the Commonwealth of Pennsylvania, including protecting and improving the lake fisheries; improving wildlife habitat for fishing, birding, hunting, and enhancing the passive recreation opportunities of the site for the enjoyment of the region's residents.

As the recreation and tourism director for the County of Beaver, I am aware of the positive economic impact Hereford Manor Lake brings to the region. We realize the Lake is a valuable asset to Franklin Township and that the Township wishes to ensure it is retained as a recreational resource. We also realize that Franklin Township does not possess the financial resources necessary to assist in the improvements necessary to bring the dams into compliance with state and federal dam safety regulations.

The loss of Hereford Manor Lake as a recreation facility fishery would have a significant negative impact on the amount of money being spent in the region by not only anglers, but sportsmen pursuing their favorite activity here in Beaver County. Additionally, there is a great amount of public support for retaining the

lakes, as has been evidenced at public hearings and town hall meetings on this issue, and the economic significance of Hereford Manor to the region, as well as a site that provides other recreation activities. These include not only fishing, but walking and hiking, bird watching, geo-caching, canoeing and kayaking, mountain biking and wildlife observation. All these recreational activities help support the local economy through the direct spending of the sportsmen in the region..

Hereford Manor has the dubious distinction of being located on the borders of three counties: Beaver, Lawrence and Butler. This location impacts potential commitments from each county in participating in a partnership that could be formed to preserve the lake fisheries.

Hereford Manor is located in a rural area of Beaver County, away from the County's population centers. And although Hereford Manor benefits all residents of the western Pennsylvania region, the immediate service area population concentration is primarily located within the Harmony, Zelienople and Cranberry Township areas of Butler County.

Hereford Manor is a regional destination for recreational pursuits. First and foremost, the property provides high quality lake fishing opportunities, from both shore and boat. The property is also used for other recreational pursuits such as I mentioned earlier. Visitors who participate in these secondary activities generally live in closer proximity to the facility.

Some of the following statistics was gleaned from the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation Reports results from interviews with U.S. residents about their fishing, hunting, and wildlife watching. It focuses on the participation and expenditures of persons 16 years of age and older. The Survey is a snapshot of one year and tells us how many people participated and how much they spent on their activities in the State in 2006.

Activities that take place at Hereford Manor are known as Wildlife-Associated Recreation, which includes fishing, hunting, and wildlife-watching activities. These categories are not mutually exclusive because many individuals participated in more than one activity. Wildlife-associated recreation is reported in two major categories: 1) fishing and hunting; and, 2) wildlife watching, which includes observing, photographing, and feeding fish or wildlife.

The State's 2006 Fishing License sales data indicated there are over 122,000 licensed anglers within the local service area – a 30-mile radius of the lake. When you expand the radius to 60 miles, the number of anglers increased to 195,000 of the total of 830,000 statewide licensed fishermen. These licensed anglers in the 60-mile radius represent over 24% of the total fishing licenses sold in the Commonwealth. These anglers spend an average of 21 days fishing, spend an average of \$1,374 per angler per year, and spend an average of \$14 each time they go to fish.

Furthermore, these numbers do not include youth anglers, under the age of 16 as they are not required to hold a license. When compared to the supply of lake fishing opportunities similar to Hereford Manor, Hereford Manor's lake represents 16%, 65 acres, of the 336 acres of similar lake fishing opportunities located in the local service area, excluding Lake Arthur in Butler County.

The PA 2004-2008 Recreation Plan indicates the average angler spent \$632 annually on fishing. Therefore, one can project that the 122,525 anglers who live within a 30-mile radius of Hereford Manor spent \$77,435,000 on fishing. With Hereford Manor representing 16% of the small lake fishing opportunities in the local service area, one can estimate that \$12,389,600 of the local service area's economic activity is attributed to those pursuing fishing opportunities at the Hereford Manor facility.

Thus, it is important to the region that Hereford Manor Lake and Dam be upgraded to ensure the area continues to benefit from the robust economic impact the Lake's users provide to the region.

Thank you.